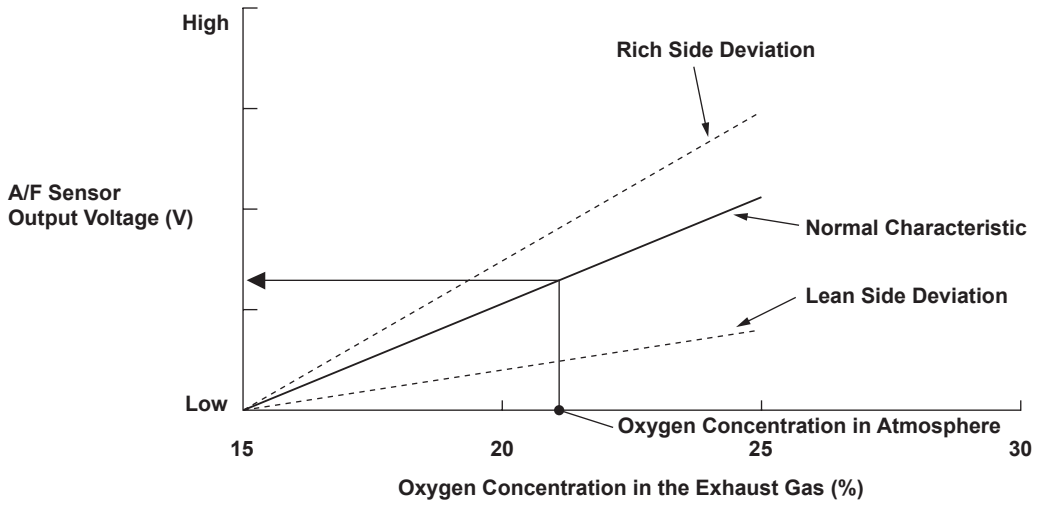
Advanced Diagnostics

DTC P1164: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Range/Performance Problem



P1164-9871

General Description

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The engine control module (ECM)/powertrain control module (PCM) computes the air/fuel ratio from the A/F sensor output voltage and uses the fuel feedback control to improve the exhaust emission. The ECM/PCM monitors the A/F sensor output voltage during deceleration with the throttle fully closed and detects a malfunction and stores a DTC if the output voltage deviates greatly from the normal oxygen concentration levels.

* However, regarding the '98/'99 model Accord (ULEV), the deviation in the lean area (especially toward) the rich side should be detected with another procedure (P1149).
* Output to the scan tool exhibits a relationship between the A/F sensor output and oxygen concentration, which is opposite to the characteristics shown in the above graph. That is, a deviation toward the rich side increases the output voltage and one toward the lean side decreases the output voltage as the stoichiometric ratio is 0.

Monitor Execution, Sequence, Duration, DTC Type

Execution	Once per driving cycle
Sequence	None
Duration	6 seconds or more
DTC Type	Two drive cycles, MIL ON

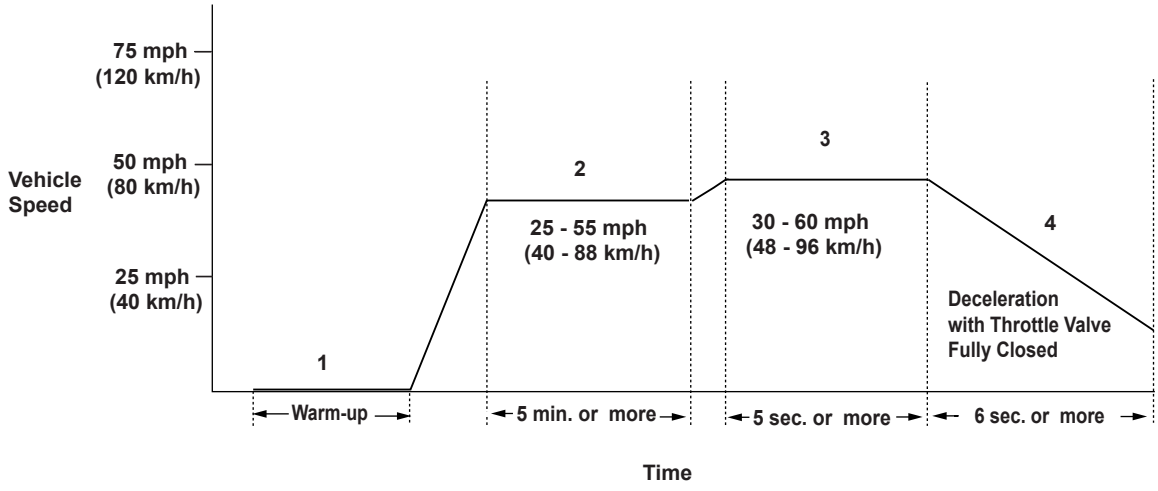
Enable Conditions

Condition	Minimum	Maximum
Engine coolant temperature	140ºF (60ºC)	—
Intake air temperature	32ºF (0ºC)	—
Engine speed	—	3,000 rpm
Vehicle speed	30 mph (48 km/h)	62 mph (100 km/h)
Fuel feedback	Other than during fuel cut-off operation for deceleration	
No active DTCs	ECM/PCM, A/F Sensor, A/F Sensor Heater, Secondary HO2S, Secondary HO2S Heater, MAP, CKP, ECT, TP, CYP, IAT, EGR, BARO, VSS, VTEC System, Fuel System, Misfire	

Malfunction Threshold

The A/F sensor output voltage is 3.8 V or less for at least 6 seconds.

Driving Pattern



P1164-9850

1. Start the engine. Hold the engine at 3,000 rpm with no load (in park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 25 - 55 mph (40 - 88 km/h) for at least 5 minutes.
3. Then, drive immediately at a steady speed between 30 - 60 mph (48 - 96 km/h) for at least 5 seconds.
4. Decelerate with the throttle valve fully closed for at least 6 seconds.

- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- If you have difficulty duplicating the DTC, retest after turning off electrical components such as the audio system and A/C, and try a different gear position.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details

Conditions for illuminating the MIL

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.
The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.